BUSHMAKINA, Z.I.; VERKHRATSKIY, N.S.; KONSTANTINOVSKIY, G.A.; KOSTYUK, L.V.; KUZ'MINSKAYA, U.A.; KUL'CHITSKIY, K.I.; MIL'KO, V.I.; FROL'KIS, V.V.

Neurohumoral regulation of the cardiovascular system in experimental arteriosclerosis. Vrach. delo no.1:3-11 Ja '62. (MIRA 15:2)

1. Institut gerontologii i eksperimental'noy patologii AMN SSSR, Kiyevskiy meditsinskiy institut.
(ARTERIOSCLEROSIS) (CARDIOVASCULAR SYSTEM)
(REFLEXES)

BUSHMAKOV, V. YA., Engineer

"Investigation of the Dynamic Effect of Soil on the Operational Members of a Tractor Plow." Sub 18 Jun 47, Moscow Inst of Mechanization and Electrification of Agriculture imeni V. M. Molotov

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

ACCESSION NR: AT4042291 S/0000/63/003/000/0137/0152

AUTHOR: Bushman, A. K.; Veklenko, I. A.; Klyavin', Ya. Ya.; Liyelpeter, Ya. Ya.

TITLE: Design development of electromagnetic induction pumps at the Physics Institute of the Academy of Sciences of the Latvian SSR

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga. 1962, Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 137-152

TOPIC TAGS: hydromagnetics, electromagnetic induction pump, cylindrical induction pump, spiral induction pump, straight line pump, liquid metal pump, induction pump design, induction pump cooling system, flow channel insulation, flow channel configuration, magnetic circuit design, pump IN-1, pump IN-4, pump IN-8, pump IN-9, pump IN-10, pump IN-11, pump IN-14, pump SIN-1, pump SIN-3

ABSTRACT: The report presents a brief survey of a number of designs developed at the Institut fiziki AN Latviyskoy SSR (Physics Institute of the Latvian Academy of Sciences) in recent years; specificiations and performance characteristics are tabulated. The designs included straight line, spiral and cylindrical electromagnetic induction pumps designed for the transfer of Na, Hg, NaK, Pb and InCa in the liquid state, operating at temperatures of 50 (Hg) to 650C (Na) and line fre-

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ACCESSION NR: AT4042291

quencies of 50 cycles/sec., and employing liquid or natural convection cooling systems. General discussion topics include the preselection of basic design characteristics in relation to the overriding operational requirements, the configuration and construction materials of channels, methods of mounting magnetic circuits, and the selection of cooling systems and heat insulating materials for the flow channel. Orig. art. has: 10 figures and 4 tables.

ASSOCIATION: Institut fiziki AN Latvlyskoy SSR (Physics Institute, AN Latvian SSR)

SUBMITTED: 04Dec63 ENCL: 00

SUB CODE: ME NO REF SOV: 002 OTHER: 001

Card 2/2

ACCESSION NR: AT4042290 S/0000/63/003/000/0129/0135

AUTHOR: Bushman, A.K., Kalny*n, T. K.

TITLE: Use of permanent magnets in induction pumps

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 129-135

TOPIC TAGS: electromagnetic induction pump, permanent magnet system, high temperature magnet performance, pump design, pump efficiency, rotating magnet assembly, induction pump

ABSTRACT: The authors present design calculations for a spiral induction pump with a star-shaped rotor and permanent rotating magnets, intended for transfer of liquid metal. Pressure and output are assigned. It is assumed that the magnetic system is magnetized after pump assembly and that the armature reaction can be ignored. The authors suggest that the advantages of a pump with rotating permanent magnets include increased efficiency due to elimination of a feed coil, capacity for operation at 600C without supplemental

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ACCESSION NR: AT4042290

cooling (when using Magnico permanent magnets with an anisotropic structure), and dependence of power factor solely on the cos φ of the motor. The sole cited disadvantage is the incorporation of rotating parts. Orig. art. has: 1 figure and numerous equations.

ASSOCIATION: none

SUBMITTED: 04Dec63 ENCL: 00

SUB CODE: ME NO REF SOV: 005 OTHER: 003

Card 2/2

5.3630

43312
S/079/62/032/011/010/012
D204/D307

AUTHORS: Petrov, K.A., Nifant'yev, E.Ye., Gol'tsova, R.G., Shchegolev, A.A., and Bushmin, B.V.

TITLE: Synthesis and peresterification of diphenyl phosphite

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 11, 1962, 3723 - 3727

TEXT: The interactions of diphenyl phosphite with aliphatic alcohols were studied since the alcoholysis of diethyl and other simple phosphites (to higher phosphites) and phosphinites requires, in some cases, inconveniently high temperatures (this journal, p. 3716) Dialkyl phosphites $(RO)_2POH$, where R = C_4H_9, iso-C_5H_{11}, C_6H_{13}, C_8H_{17}, C_9H_{19}, $C_{10}H_{21}$, $ClCH_2CH_2$, and $C_2H_5OC(O)CH_2$, were prepared in 91-96 % yields by adding 2 moles ROH to 1 mole $(PhO)_2POH$ and heating for 3-8 hours at 100°C, in the presence or absence of catalyst (Na). The high reactivity of diphenyl phosphite as compared to those of simple dialkyl phosphites is ascribed to (1) the existence

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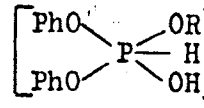
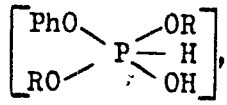
Synthesis and peresterification ...

of transistory forms  and  , which prefe-

rentially eliminate PhOH rather than ROH, owing to the considerably higher electrophilic character of the PhO group, and (2) the fact that the tautomeric equilibrium favors the trivalent P form far more in diphenyl than, say, in diethyl phosphite. Similar reactions took place readily with substituted alcohols such as e.g. $(CH_3)_2NCH_2CH_2OH$. Diphenyl phosphite was obtained almost quantitatively by the equimolar interaction of diphenyl chlorophosphite with methanol (sealed tube, 100°C, 3 hrs.) and by the interaction of methyl dichlorophosphite with phenol (1:2) at 100°C for 1 hr. The latter method, which is generally convenient for the preparation of diaryl phosphites, was also used to make di-p- and di-m-cresyl phosphites, in ~100 % yields, by reacting CH_3OPCl_2 with para- and meta-cresols

There is 1 table.

SUBMITTED: December 14, 1961
Card 2/2

DUSHMAN, IRINA

Shtockmar, Mikhail Petrovich, 1903-

"Research in the field of Russian folk versification." M.P. Shtockmar. Reviewed by Irina Dushman. Vest. Inst. po izuch. ist. i kul't. SSSR No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress June 1953. UNCL.

BUSHMAKIN, I.N.

Applicability of the method of Redlich and Kister for checking the isobaric data for the liquid-vapor equilibria. Zhur.prikl. khim. 35 no.10:2205-2213 O '62. (MIRA 15:12)

1. Leningradskiy gosudarstvennyy universitet.
(Phase rule and equilibrium)

BUSHMANENE, E. M.: Master Med Sci (diss) -- "A sanitary-hygiene evaluation of the feeding and physical development of children in children's homes in the Lithuanian SSR". Vil'nyus, 1958. 16 pp (Min Higher Educ USSR, Vil'nyus State U im V. Kapsukas), 150 copies (KL, No 6, 1959, 142)

BUSHMANOV, A. F.

"Weather of the Middle Ural Area During the Period of Agricultural Spring." Thesis for degree of Cand. Geographical Sci. Sub 13 Jun 50, Inst of Geography, Acad Sci USSR.

Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

BUSHMANOV, A.F.

Some features of the thermal regime in the Central and Southern Urals. Zap.Ural.fil Geog. ob-va SSSR no.4:41-55 '61.
(MIRA 18:12)

BUSHMANOV, A.P.

14-1-675

Translation from: Referativnyy Zhurnal, Geografiya, 1957, Nr 1, p. 80 (USSR)

AUTHOR: Bushmanov, A. P.

TITLE: Weather Conditions in the Middle Urals during the Spring Cultivation Period (Pogoda Srednego Urala v period sel'-skokhozyaystvennoy vesny)

PERIODICAL: Uch. Zap. Sverdl. gos. ped. in-ta, 1955, Nr 12, pp. 65-96

ABSTRACT: A description, based on data provided by the Sverdlovsk office of hydrometeorological services, is given of weather conditions in the Middle Urals during the spring cultivation period, with special reference to local variations in the different physico-geographic regions. Altogether 7 regions are covered; the N. mountainous Urals are not included due to a lack of information. The data used was accumulated by meteorological stations during a 10 year period (1926-1935); data on the SW foothills and the SE mountainous Urals was accumulated during the last 38 years (1898-1935). The spring cultivation period usually falls between April 15 and June 15. Data shows that on the average 2/5 of the period has no precipitation, that rainy

Card 1/2

14-1-675

Weather Conditions in the Middle Urals during the Spring Cultivation Period. (Cont.)

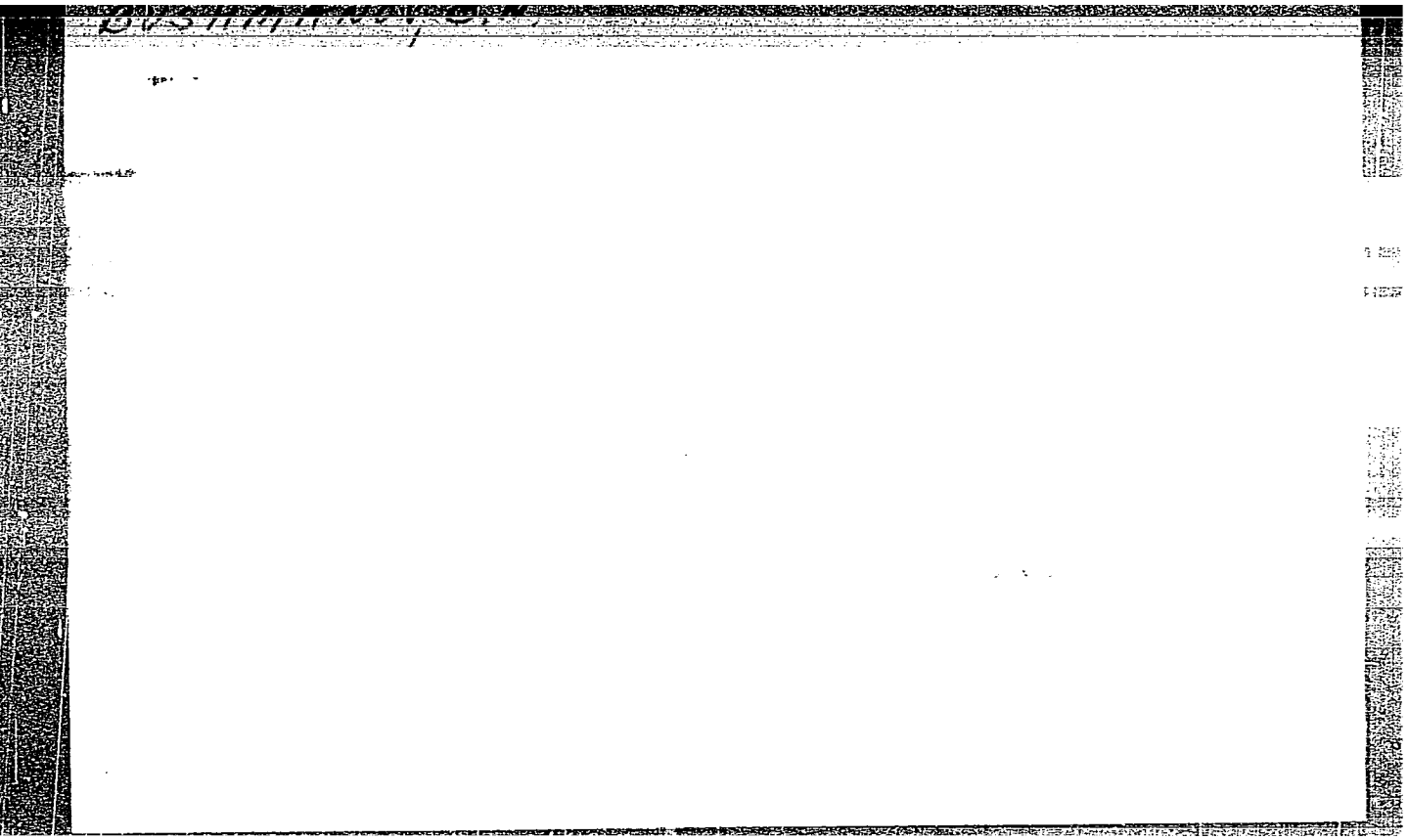
weather makes up 1/4 to 1/3 of the total number of days within this period. The greatest number of rainy days is observed in the W foothills and in the W region of the mountainous Urals. The author's description of weather conditions is based on mean average data for each half month of the period; an attempt is made to distinguish the various types of springs. Altogether 5 types are established: the very dry, dry, moderately wet, freezing, and thawing. The most frequent type (about one half) are the moderately wet springs. A table is provided showing the frequency of each type by physico-geographic regions.

N. A.

Card 2/2

BUSHMANOV, B.N.; SHERSTNEV, Yu.V.

Using electronic zero-indicators for some laboratory experiments in electricity. Trudy KAI 29:105-108 '55. (MLRA 10:6)
(Electronic instruments)



APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307720004-8"

AUTHOR: Bushmanov, B. N. 126-2-17/30

TITLE: Growing of large single crystals of zinc with a given orientation. (Vyrashchivaniye bol'shikh monokristallov tsinka s zadannoy oriyentatsiey).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), Vol.IV, No.2,1957, pp.310-314 (USSR).

ABSTRACT: A method is described of producing zinc monocrystals with a desired orientation of the crystallographic axes. The crystal is grown by introducing through a layer of flux a monocrystalline seeding, the upper end of which is cooled. The apparatus for producing such monocrystals is shown in Fig.1 and consists of an ordinary crucible furnace with an additional heater fitted at the bottom, two rheostats in the circuits of the main and the additional heater, three thermocouples, a rack for feeding the seeding into the melt and a stand for giving the seeding the necessary orientation. By this method single crystals of 45 to 83 mm dia, weighing 0.6 to 2.1 kg were obtained and if the instructions are observed there are almost no failures at all. Photographs of some of the thus grown monocrystals are reproduced in Figs. 2 - 6. The work was carried out in the laboratories of the Chair of General Chemistry of the Kazan

Card 1/2

Growing of large single crystals of zinc with a given orientation. (Cont.) 126-2-17/30

Aviation Institute under the leadership of Professor G. S. Vozdvizhenskiy.

There are 6 figures and 12 references, of which 9 are Slavic.

ASSOCIATION: Kazan Aviation Institute. (Kazanskiy aviatsionnyy institut.

SUBMITTED: May 18, 1956.

AVAILABLE:

Card 2/2

BUSHMANOV, B. N.

20-5-36/60

AUTHOR BUSHMANOV, B.N., VOZDVIZHENSKIY, G. S.

TITLE An Investigation of the Process of exchange $Zn \rightleftarrows Zn^{++}$ on the Facets of Zinc Monocrystal by the Method of Radioactive Indicators. (Izucheniye protsessa obmena $Zn \rightleftarrows Zn^{++}$ na granyakh tsinkovogo monokristalla metodom radioaktivnykh indikatorov - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 5, pp 1046-1048 (U.S.S.R.)

ABSTRACT In recent times it became more and more obvious that the electrochemical processes, including those which determine the sign and quantity of the electrode potential, are dependent on the crystallographic direction of the sample. Formerly there existed contradictory data on the potentials of Zinc-, aluminum-, copper-, iron- and other monocrystals. At present it can be considered an established fact that various facets of these monocrystals possess various potentials in the presence of a current as well as in polarization. The difference of potential for individual facets may amount to some ten millivolts and increase considerably in the case of polarization with increasing current density. Thus it is evident that the exchange processes atom $\rightleftarrows$ ion on various facets of metal-monocrystals essentially differ from one another in their nature and also in their kinetics. One of the methods of the qualitative study of the exchange currents is that of radioactive indicators. From this method sufficiently reliable data for the cases of exchange on the boundary between amalgam and solution were obtained. More complicated relationships may be met with on solid metal surfaces. Gaysins-

Card 1/3

An Investigation of the Process of Exchange Zn Zn^{++} on the Facets of Zinc Monocrystal by the Method of Radioactive Indicators.

kiy and his collaborators concluded from their works that the reactions atom⇄ion themselves proceed very rapidly, that they are reversible, and independent of the metal suface. By other investigations, however, it was found that the state of the surface influences the exchange rate. The changes in velocity are ascribed to the differences in the crystalline structure. At the same time opinions were expressed according to which the exchange between the metal and the radioactive ions of this metal is not the result of a simple rearrangement connected with the electrode potential. On the contrary, here the exchange is complicated by the adsorption and by other processes which take place on the surface of the metal. The samples treated accordingly were isolated by bakelite lacquer. Tab. 1 shows that the activity won by the facet is approximately 10% higher than that obtained by the basis. This result in itself might not give sufficient conviction, for the error margin domains for basis and prism almost touch each other. According to the authors' opinion the surface of polycrystalline zinc consists of a mosaic of plateaus of two crystallographic facets-basis and prism-which are short-circuited by the body of the sample itself. This galvano pair, as is known, possesses an electromotoric power determining the activity of the samples, which probably influences the course of the process. To check this assertion the authors studied the process on basis-prism samples which were connected to form galvano pairs.

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20-5-36/60

An Investigation of the Process of Exchange Zn Zn^{++} on the Facets of a Zinc Monocrystal by the Method of Radioactive Indicators.

In this case the effect of anisotropy is more sharply expressed than in the previous case and amounts to approximately 25%. From the above-described it follows that the course of the exchange process atom=ion on the monocrystal facets of zinc depends on the crystallographic direction. On a less densely packed facet of the prism which possesses a more negative potential, the exchange proceeds more intensely. If samples of basis and prism are connected to circuited pairs, which is always the case on the surface of a polycrystalline metal, the exchange equilibrium on the prism facet shifts in the direction of ion formation, on the basis facet, on the contrary, it shifts toward atom formation. The influence of crystallographic orientation on the activity obtained by the samples is most distinctly expressed in this case.
(1 fig., 2 tables, 15 Slavic references).

ASSOCIATION Kazan Institute for Aviation.
PRESENTED BY FRUMKIN A.N., Member of the Academy
SUBMITTED 2.1.1957
AVAILABLE Library of Congress.
Card 3/3

BUSHMANOV, P.N., Cand Chem Sci -- (diss) "Study of the process of atom ⇄ ion exchange on the faces of a zinc monocrystal by the method of radioactive indicators." Kazan', 1958, 12 pp (Min of Higher Education USSR. Kazan' ~~Chemical Engineering~~ Chemicotechnological Inst im S.M. Kirov) 120 copies

(KL, 27-58, 103-4)

24(2),18(0)

AUTHORS: Bushmanov, B. N., Vozdvizhenskiy, G. S. SOV/20-124-2-30/71

TITLE: On the Problem of the Influence of Crystallographic Orientation on the Reactions of Isotope Exchange on a Metal Surface (K voprosu o vliyanii kristallograficheskogo napravleniya na reaktsii izotopnogo obmena na metallicheskoy poverkhnosti)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 346-349 (USSR)

ABSTRACT: The present paper is a continuation of earlier investigations of this problem. The results previously obtained with 1 cm^2 samples were verified on samples having a surface of 6 cm^2. The results obtained by the present paper confirm the previously found anisotropy in the exchange between the surfaces of the base (0001) and the prism 1 with the position $(10\bar{1}0)$. No differences were, however, found between the intensities of exchange on the surfaces $(10\bar{1}0)$ and (1210). Also the activity acquired by the samples at various exchange temperatures was measured. With an increase of temperature from 0 to 69° the activity acquired by the samples grows by three to four times its amount. The mean value of the activation energy of the process $Zn \rightleftharpoons Zn^{++}$, which was calculated on the

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basis of these results, amounts to 3,700 cal/mol within the temperature interval 0-69° on the basal plane and to 3400 cal/mol on the prism plane. The authors also investigated the (very rapidly developing) inverse exchange. This exchange develops all the more rapidly the higher the concentration of the zinc sulphate becomes. In the second part of this paper the results obtained are discussed. The intensity difference on the basal and prism planes is connected with the peculiarities of structure. The stable remanent activity in inverse exchange is apparently due to the fact that a certain quantity of zinc ions diffused into the interior of the metal and can therefore not take part in the exchange with the ions in the solution. Also crystallographic orientation influences inverse exchange, but this influence is less marked. The different behavior of the varied planes of a zinc monocrystal in a solution marked by the radioactive isotope is probably due to some causes of minor importance (as e.g. different distribution of impurities and defects of the crystal lattice over the various planes and faces, difference in thickness and mass of the

oxide film on them, or different adsorbing capacity of the planes). There are 3 figures and 15 references, 7 of which are Soviet.

ASSOCIATION: Kazanskiy aviatsionnyy institut (Kazan' Aviation Institute)

PRESENTED: September 13, 1958, by A. N. Frumkin, Academician

SUBMITTED: September 10, 1958

27755
S/058/61/000/007/050/086
A001/A101

18.9500

AUTHOR: Bushmanov, B.N.

TITLE: Large-scale growth of metal single crystals without use of glass crystallization tubes

PERIODICAL: Referativnyy zhurnal. Fizika, no.7, 1961, 258-259, abstract 7E291 ("Tr. Kazansk. khim.-tekhnol. in-ta", 1960, no. 29, 40 - 42)

TEXT: A new method of growing single crystals of low-melting metals in a dismountable graphite crucible is described. A graphite rod is densely inserted into a graphite tube sawed into four equal parts along the generatrices and fastened with collars. Eight 12-14 mm cylindrical holes are drilled in the assembled piece in such a way that the division surface "cylinder - tube" should divide these holes into two equal parts. Molten metal is poured at once into 8 depressions, and the block is placed into a vertical tubular furnace. A definite temperature drop sets in the entire block, which is controlled with four thermal couples placed within the graphite rod at different heights. Cooling is performed from the bottom. With the conditions selected properly, 7-8 single crystals are obtained from 8 specimens.

G. Krasko

[Abstracter's note: Complete translation]

Card 1/1

18.9500

S/058/62/000/005/074/119
A061/A101

AUTHOR: Bushmanov, B. N.

TITLE: Growth of large metallic single crystals of a prescribed orientation and series growth of seed crystals

PERIODICAL: Referativnyy zhurnal, Fizika, no. 5, 1962, 11, abstract 5E91 (V sb. "Rost kristallov. T. 3", Moscow, AN SSSR, 1961, 402 - 407. Discuss., 501 - 502)

TEXT: A description is given of the design of an apparatus, in which large metallic single crystals of a prescribed orientation are grown by introducing a cooling monocrystalline seed crystal into the fused metal from the top through a flux layer. The maximum weight of the resulting single crystals is 7 kg. The growth process takes 2 - 11 hours. The necessity of using a fluxing agent to protect the metal surface against oxidation is pointed out. A method of obtaining metallic crystals without shrinkage cavity and of producing twin-crystal specimens is presented. However, the procedure described does not ensure a high purity of the single crystals. A modified Bridgman method is suggested for grow-

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Growth of large metallic single crystals...

ing seed crystals 10 - 12 and 18 - 20 mm in diameter. In the series production of seed crystals, the yield of single crystals is 60 - 80%. 10 - 15 Zn single crystals, 10 - 12 mm in diameter, are obtained from one heat. There are 22 references.

M. Khomyakova

[Abstracter's note: Complete translation]

Card 2/2

40287

S/081/62/000/014/002/039
B166/B144

18.9500

AUTHOR: Bushmanov, B. N.

TITLE: Growth of large metallic single crystals with a given orientation and series growth of seed crystals

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1962, 31, abstract 14B204 (Sb. "Rost kristallov. v. 3". M., AN SSSR, 1961, 402-407)

TEXT: Large Zn and Pb single crystals of up to 83 mm diameter, weighing 2-3 kg and having a given orientation were grown by introducing a seed crystal from above the melt, through which the heat was removed. The overheat of the melt is 50-60° above the melting point of Zn and 30°C for Pb. To prevent the surface of the metal from oxidizing flux is poured over the melt. The flux used for Zn was Zn chloride and that for Pb was a eutectic melt PbCl - ZnCl. A large single crystal took 2-11 hrs to grow. For the series growth of inoculating single crystals, based on the Bridgman method, 19 crystallization tubes 10-12 mm diameter or 7 tubes 18-20 mm diameter were lowered into the furnaces. In series production

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Growth of large metallic single ...

the yield of single crystals is 60-80%, whereas when just one crystal is grown the yield is only 25%. This is explained by the fact that a large mass of molten metal carries a large reserve of heat and has a stabilizing effect on the temperature field around the crystallization tubes, which reduces the probability of local overcooling such as could set up new crystallization centers. In 6-10 hrs 10-15 single crystals 10-12 mm diameter were obtained. [Abstracter's note: Complete translation.]

L 19390-63 EWT(1)/EWP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD/ESD-3/IJP(C) JD
ACCESSION NR: AT3001924 S/2912/62/000/000/0268/0279

AUTHORS: Bushmanov, B.N.; Vozdvizhenskiy, G.S.

TITLE: The laws governing the growth and the anisotropy of the surface properties of metallic single crystals

SOURCE: Kristallizatsiya i fazovyye perekhody. Minsk, Izd-vo AN BSSR, 1962, 268-279

TOPIC TAGS: crystal, crystallization, crystallography, dissolution, decrystallization, single crystal, anisotropy, surficial, surface, diffusion, self-diffusion, Ag, W, Ba, Al, brass, mobility, adsorption, oxidation, corrosion, orientation, Cu, Armco Fe, atalysis, catalytic process, lattice, electron, emission, release, escape, Fe, Ni, Zn, texture, ion-atom exchange.

ABSTRACT: This paper comprises a survey of investigations on the anisotropy of surface properties of metallic single crystals (SC), both with reference to extensive literature data and with reference to experimental laboratory data obtained by the authors. The authors are not aware of any other survey of this problem that would be comparable either in the approach to the problem or in the volume of material studied. Especial emphasis is placed on a conjoint and equipollent study of both the growth and the dissolution of real SC's. The anisotropy of surficial diffusion and

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ACCESSION NR: AT3001924

selfdiffusion mechanisms and kinetics of the growth or dissolution of a crystalline face is obviously affected by the character of the movement of particles along that face. Anisotropy of surface energy affects the motion of such particles. The existence of this phenomenon in metals at near-m. p. T's is noted. Papers on the anisotropy of surface selfdiffusion on Ag single crystals are cited, also studies on the anisotropy of the mobility of adsorbed H. The existence of preferential directions of surface diffusion and selfdiffusion on the faces of SC's and the existence of surface mobility on metallic catalyzers are mentioned. Adsorption anisotropy. Numerous papers, relating experiments performed by different methods, have rendered evident the adsorption anisotropy of some gases and metals either on pure surfaces of metallic single crystals (Cu, Zn, Ni, W) or on metals covered with an oxide film. Anisotropy of oxidation and corrosion. P. D. Dankov's principle of orientational dimensional correspondence of mutually conjugate crystal lattices of metal and oxide, and the numerous confirmations of this observation, are cited. Anisotropy of catalytic processes. Theories cited: A. A. Balandin's multiplet theory of catalysis, N. I. Kobozev's theory of active centers, various papers on the different catalytic activity of different faces of metallic SC of differently-textured surfaces, the effect of the interaction between surface atoms/ions of the catalyzer and the molecules catalyzed thereby. Anisotropy of the work of electron release. Papers on the dependence of the work of release on the crystallographic direction are surveyed. Anisotropy of

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L 19390-63

ACCESSION NR: AT3001924

4

electrode potentials. This problem, which is closely related to the work of the electron release from a metal, is covered in the survey both for generalized studies and for studies on Zn, Cu, Al, and brass. The problem of the dependence of the electrode potential on the crystallographic orientation of a given face of a metallic crystal is stated to be generally understood. Voluminous experimental data are being accumulated. Anisotropy of ion-atom exchange processes. In addition to a literature survey, the author cites his own investigations on the ion-atom exchange process on the fundamental faces of a Zn single crystal in a $ZnSO_4$ solution. It is established that the exchange on the faces $(10\bar{1}0)$ and $(\bar{1}2\bar{1}0)$ proceeds more intensely than on the face (0001). The difference in the exchange rates attains 8%. Anisotropy of crystallization and decrystallization. A detailed survey of extant literature concludes with the statement that all processes of decrystallization (chemical dissolution, evaporation, sublimation, cathode pulverization, anodic dissolution), as well as all processes of crystallization, are closely tied to the crystalline structure of a substance and have a sharply pronounced vectorial character. Orig. art. has no tables, figures or formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 16Apr63 ENCL: 00

SUB CODE: CH, PH, MA, EL NO REF SOV: 115 OTHER: 070

Card 3/3

BUSHMANOV, B. S., Cand Vet Sci -- (diss) "Selection and Utilization of Horses as Producers of Gastric Juice." Len, 1957. 14 pp (Min of Agriculture, Len Veterinary Inst), 100 copies (KL, 47-57, 90)

BUSHMANOV, Kirill Andreyevich, polkovnik; KREKSHIN, N.A., podpolkovnik, red.; KONOVALOVA, Ye.K., tekhn.red.

[How to give drill instruction] Kak provodit' zaniatiia po stroevoi podgotovke. Moskva, Voen.izd-vo M-va obor.SSSR, 1960. 70 p. (MIRA 14:3)
(Drill and minor tactics)

BUSHMANOV, K.A., polkovnik; KREKSHIN, N.A., podpolkovnik, red.; KUZ'MIN, I.F., tekhn. red.

[Responsibilities toward subordinates and concern for them] Trebovatel'nost' k pochinennym i zabota o nikh. Moskva, Voen.izd-vo M-va obor.SSSR, 1961. 55 p. (MIRA 14:12)
(Military discipline)

BUSHMANOV, K., polkovnik

Defensive operations by a motorized rifle battalion. Voen. vest. 42 no.8:18-21 Ag '62. (MIRA 15:7)
(Attack and defense (Military science))

124-1957-1-457

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 58 (USSR)

AUTHOR: Bushmanov, V. A.

TITLE: Some Technological Problems in the Performance of Tests According to the EGDA Method Utilizing Electrically Conductive Paper (Nekotoryye voprosy tekhnologii proizvodstva opytov po metodu EGDA pri ispol'zovanii elektroprovodnoy bumagi)

PERIODICAL: Izv. Vses. n.-i. in-ta gidrotekhn., 1955, Vol 54, pp 220-222

ABSTRACT: It is proposed that, in the simulation of a complicated feed boundary in a model test on electrically conductive paper, a copper wire having a 0.6-0.7 mm diameter be employed as a contact bus bar. Investigations have revealed only an extremely insignificant increment with time in the electric resistance of the contact surface between the copper wire and the electrically conductive paper. The setting of a contact wire having a complicated shape on the electrically conductive paper is accomplished by placing alongside the wire a sheet of cardboard 0.4-0.5 mm thick, one edge of which bears the outline of the shape of the model. The wire is then fastened to a Plexiglas top plate with the aid of special stringers. In order to obtain a linear potential distribution it is recommended

Card 1/2

124-1957-1-457

Some Technological Problems in the Performance of Tests (cont.)

that rectangular stringers be used, made of electrically conductive paper of significantly greater conductivity than the paper employed in the model.

P.F.Fil'chakov

1. Paper--Conductors--Test methods

Card 2/2

ARAVIN, V.I., professor, doktor tekhn.nauk; BUSHMANOV, V.A., mladshiy nauchnyy sotrudnik

Experimental investigation of seepage in the southern part of the Ukrainian steppe. Izv.VNIIG 59:176-180 '58. (MIRA 13:7)
(Ukraine--Soil percolation)

BUSHMANOV, V.D., Cand Tech Sci --(diss)" Study of the effect of the basic parameters of manual drill hammers (perforators) upon dust formation." Irkutsk, 1959. 21 pp (Min of Higher Education USSR. Novocherkassk Order of Labor Red Banner Polytech Inst im Sergo Ordzhonikidze), 160 copies (KL,36-59, 119)

S/056/60/039/005/013/051
B029/B077

AUTHOR: Bushmanov, V. K.

TITLE: Hydrodynamic Stability of a Liquid Film at a Vertical Wall

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 5(11), pp. 1251-1257

TEXT: P. L. Kapitsa started theoretical investigations of wavelike flow. Using the methods proposed in Ref. 2, he determined the smallest value for the Reynolds number where the wavelike flow is still steady. The present paper deals with the limiting case of a parallel flow. This problem differs from that of P. L. Kapitsa in that wavelike behavior can appear and vanish at different Reynolds numbers. This "method of small disturbances" introduces small disturbances into the main flow. At first the Navier-Stokes linearized system of hydrodynamic equations and the equations of continuity for disturbances are written along with their boundary conditions. The author uses non-dimensional quantities. The neutral curve has to be found numerically, and the author obtains a curve for the positive and negative phase velocities. The following is valid for critical

Hydrodynamic Stability of a Liquid Film at a Vertical Wall

S/056/60/039/005/013/051
B029/B077

data:

	$k>0$	$k<0$	two previous papers by P. L. Kapitsa and S. P. Kapitsa
Rey	260	72	22
$n=2\pi a/\lambda$	0.3	0.4	0.1
λ, cm	0.62	0.30	0.89
k, cm/sec	27.7	-15.1	12.4

Special attention should be paid to disturbances rising vertically at a rate of 15.1 cm/sec; and with Rey ~ 72 they interrupt the flow and cause a wavelike motion. In several tests the inverse problem was solved, and the lower limit of stability for the wavelike flow was calculated to be Rey=22. Wavelike behavior can appear and vanish at different Rey. The zones of plane and wavelike flows overlap partly. In the following part, the method of P. L. Kapitsa is compared with that of small disturbances. P. L. Kapitsa found the lower limit of stable wavelike flow, whereas the method of small disturbances may be used to determine the upper limit of a plane flow. The results of both methods correlate, and the result of

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Hydrodynamic Stability of a Liquid Film at a Vertical Wall

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P. L. Kapitsa was confirmed experimentally. The author of the present paper criticizes the accuracy of the method of Kapitsa which is also described in detail. Both methods can be further developed but only by overcoming many mathematical difficulties. The author thanks V.S.Sorokin for suggesting this method and S. P. Kapitsa for his interest. There are 1 figure, 1 table, and 3 Soviet references.

ASSOCIATION: Ivanovskiy gosudarstvennyy pedagogicheskiy institut (Ivanovo State Pedagogical Institute)

SUBMITTED: February 5, 1960

Card 3/3

BUSHMANOV, V. K.

Cand Phys-Math Sci - (diss) "Wave course of thin layers of viscous liquids." Ivanovo, 1961. 10 pp; (Yaroslavl' State Pedagogical Inst imeni K. D. Ushinskiy); 215 copies; price not given; (KL, 7-61 sup, 218)

PERETOLCHIN, V.A., kand. tekhn. nauk; KOLEDIN, Yu.M., inzh.; BUSHMANOV, V.M., inzh. STRABYKIN, N.N., inzh.; DOLGUN, Ya.N., inzh.; ANISIMOV, A.I., inzh.

Efficient design of boring bits for the SVB-2 machines. Gor. zhur. no.6: 75-76 Je '65. (MIRA 18:7)

1. Irkutskiy politekhnicheskiy institut.

Bushmanov, Ya.K.

SOV/110-59-8-24/24

AUTHOR: Rodionov, Yu.I., Engineer.

TITLE: An All-Union Conference on Mobile Power Stations and Power sets with Outputs of 0.5 to 200 kW.

PERIODICAL: Vestnik elektropromyshlennosti, 1959, Nr 8, pp 79-80 (USSR)

ABSTRACT: An All-Union Conference on the further development of the production of mobile power stations with outputs of 0.5 to 200 kW was held in Novosibirsk and was attended by representatives of GOSPLAN USSR, GOSPLAN RSFSR, the Scientific Technical Committee of the Councils of Ministers of the USSR and RSFSR, Councils of National Economy, a number of Ministries, Research Institutes, Design Offices, Factories and others. The reports of Yu. K. Bushmanov and B.A. Zil'bershteyn gave data about the probable development of the output of mobile power stations and supply sets for the period 1959-65. Questions of centralising the design and manufacture of particular types of equipment for mobile power stations were mentioned. Doctor of Technical Science A.G. Iosif'yan recounted work done to improve the technical characteristics of mobile power stations, particularly by

Card 1/3

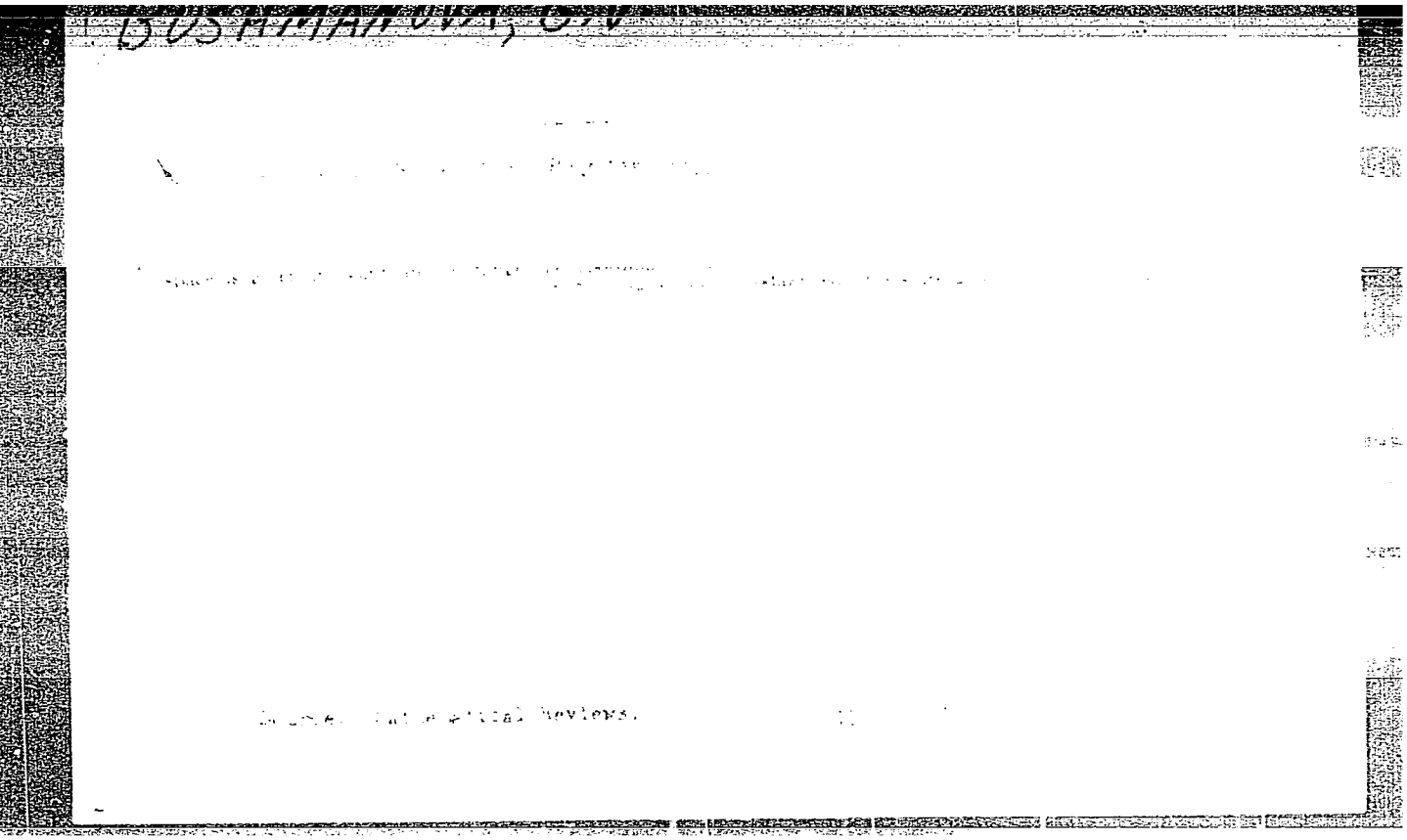
An All-Union Conference on Mobile Power Stations and Power Sets with Outputs of 0.5 to 200 kW.

improved cooling methods. A new development is the production of free-piston engines in combination with gas turbines. The author indicated the prospects of using atomic power for mobile supplies. Engineer A.P. Golyukov described a newly-developed series of sets which are more reliable than the old ones and can be started up more quickly. After some further improvement these sets will be widely used in agriculture and forestry, remote oil-fields and so on. Candidate of Technical Sciences D.N. Bystritskiy reported upon the automation of mobile diesel power stations used in agriculture. Engineer Ye.A. Meyerovich described a standardised series of generators driven by petrol engines for single and three-phase supply. Engineer M. P.Belyakov reported on the development of gas turbines and their application to mobile power engineering. The need to centralise research and design work in this field was emphasised. Engineer V.V. Apsit described flywheel-type engine generators which are much lighter and simpler than standard generators. Engineer G.A. Anishchenko and Engineer V.P. Lebedev dealt with safety

An All-Union Conference on Mobile Power Stations and Power Sets with Outputs of 0.5 to 200 kW.

requirements in connection with mobile power stations. Engineer V.A.Martirosyan described synchronous generators of up to 100 kW with excitation from selenium rectifiers. A further description of similar equipment was given by Engineer A.Ye Shvartsman. The conference requested GOSPLAN USSR and the GOSPLANs of the Union Republics to establish specialisation of Councils of National Economy on the manufacture of mobile power generating sets and also to specialise the Institutions concerned with the development of these sets.

USCOMM-DC-61,535



BUSHMANOVA, G.V.

Conformal mapping of surfaces with preservation of lines of constant geodetic curvature. Uch.zap.Kaz.un. 116 no.1:3-6 '55.
(MLRA 10:5)

1.Kafedra obshchey matematiki.
(Conformal mapping)

AUTHOR: Bushmanova, G.V. SOV/140-58-6-6/27

TITLE: On a Case of Conformal Mappings of Surfaces (Ob odnom sluchaye konformnogo otobrazheniya poverkhnostey)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 6, pp 48-57 (USSR)

ABSTRACT: The author investigates a conformal mapping of surfaces for which the curves of constant geodesic curvature of one surface are transferred to those of the other surface. Then the problem is generalized to two-dimensional Weyl spaces, where the notion of the geodesic circle of a Weyl space is introduced. Finally, in general curvilinear coordinates, the author considers quasicircles, i.e. plane curves which are transferred to circles by a certain conformal mapping. The author's considerations base on differential geometric investigations of A.P.Norden.
There are 5 Soviet references.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina (Kazan' State University imeni V.I.Ul'yanov-Lenin)

SUBMITTED: March 3, 1958

Card 1/1

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16.5600

AUTHOR: Bushmanova, G.V.

TITLE: Conformal Mapping of Surfaces With an Invariance of the Integral Curvature

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.Matematika,1960, No. 4, pp. 29 - 35

TEXT: The author considers a conformal ($ds_1^2 = e^{2p} ds^2$) mapping of two surfaces for which the corresponding contours on both surfaces are passed in the same direction and for which

$$\iint_{B_1} K_1 \sqrt{g_{11}^{(1)} g_{22}^{(1)} - g_{12}^{(1)2}}\, du\, dv = \iint_{B} K \sqrt{g_{11} g_{22} - g_{12}^2}\, du\, dv$$

where K_1 and K are the Gaussian curvatures and B_1 and B are regions corresponding to eachother. It is stated that such a mapping takes place then and only then if p is a harmonic function. Such a mapping is called

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harmonic. Here it holds

(4) $$K_1 = e^{-2p} K$$

and

(5) $$K_1 \, ds_1^2 = K \, ds^2$$

so that $K\,ds^2$ is a differential invariant. In order that the surfaces with the linear elements ds^2 and ds_1^2 can be mapped harmonically one onto another it is necessary and sufficient that the surfaces with the linear elements

(6) $$\overline{ds^2} = |K|\, ds^2 \quad \text{and} \quad \overline{ds_1^2} = |K_1|\, ds_1^2$$

are developable one onto another. Let $\overline{K} = \frac{K}{|K|} - \frac{1}{2} \frac{\Delta_2 \ln|K|}{|K|}$. The

expression

Conformal Mapping of Surfaces With an Invariance of the Integral Curvature

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(7) $$\partial\mathfrak{C} = \frac{\Delta_2 \ln |K|}{|K|} = 2\frac{K}{|K|} - 2\overline{K}$$

is an invariant of the harmonic mapping. Several exceptional cases are investigated ($\partial\mathfrak{C}$ = const, $\partial\mathfrak{C}$ - variable etc). The author gives surfaces which for the considered mapping correspond to the surfaces of constant curvature.

There are 4 references : 2 Soviet, 1 French and 1 German.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-Lenina (Kazan' State University imeni V.I. Ul'yanov-Lenin)

SUBMITTED: May 28, 1959

Card 3/3

BUSHMANOVA, G.V.

One generalization of the conformal mapping of a three-dimensional Euclid space. Izv.vys.ucheb.zav.; mat. no.2:27-34 '62.
(MIRA 15:8)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.
(Conformal mapping) (Spaces, Generalized)

BUSHMANOVA, Galina Vladimirovna

[Course on common differential equations and on the equations of mathematical physics] Kurs obyknovennykh differentsial'nykh uravnenii i uravnenii matematicheskoi fiziki, uchebnoe posobie. Kazan', Izd-vo Kazanskogo univ., 1962. 169 p. (MIRA 17:7)

BUSHMANOVA, Galina Vladimirovna; NORDEN, Aleksandr Petrovich; SHIROKOV, A.P., nauchn. red.; MICHURINA, N.N., red.

[Introduction to conformal geometry] Vvedenie v konformnuiu geometriiu. Kazan', Izd-vo Kazanskogo univ., 1964. 92 p. (MIRA 18:5)

BUSHMANOVA, L.G.

Treatment of actinomycosis with penicillin. Khirurgiia, Moskva no.3: 74 Mar 1952. (CLML 22:1)

1. Of the Faculty Surgical Clinic (Director -- Prof. V. M. Voskresenskiy, deceased), Tomsk Medical Institute imeni V. M. Molotov.

BUSHMANOVA, YE. L.

USSR/Metals Jan 1948
Steel Alloys
Steel - Tensile Strength

"The Effectoof Alloying Elements on the Resistance to Friability of Highly Tensile Steels," Ya. M. Potak, Candidate Tech Sci, Ye. L. Bushmanova, Engr, VIAM, 4¼ pp

"Stal' " No 1

Author states that the friability of parts from highly tensile steels, due to loading, is usually due to the friability of alloying materials added to the molten steel to increase the tensile strength. Discusses results of his experiments, showing that additions of nickel, chrome, copper, and tungsten had the greatest effect, while small additions of vanadium, titanium, and molybdeum had somewhat lesser effect.

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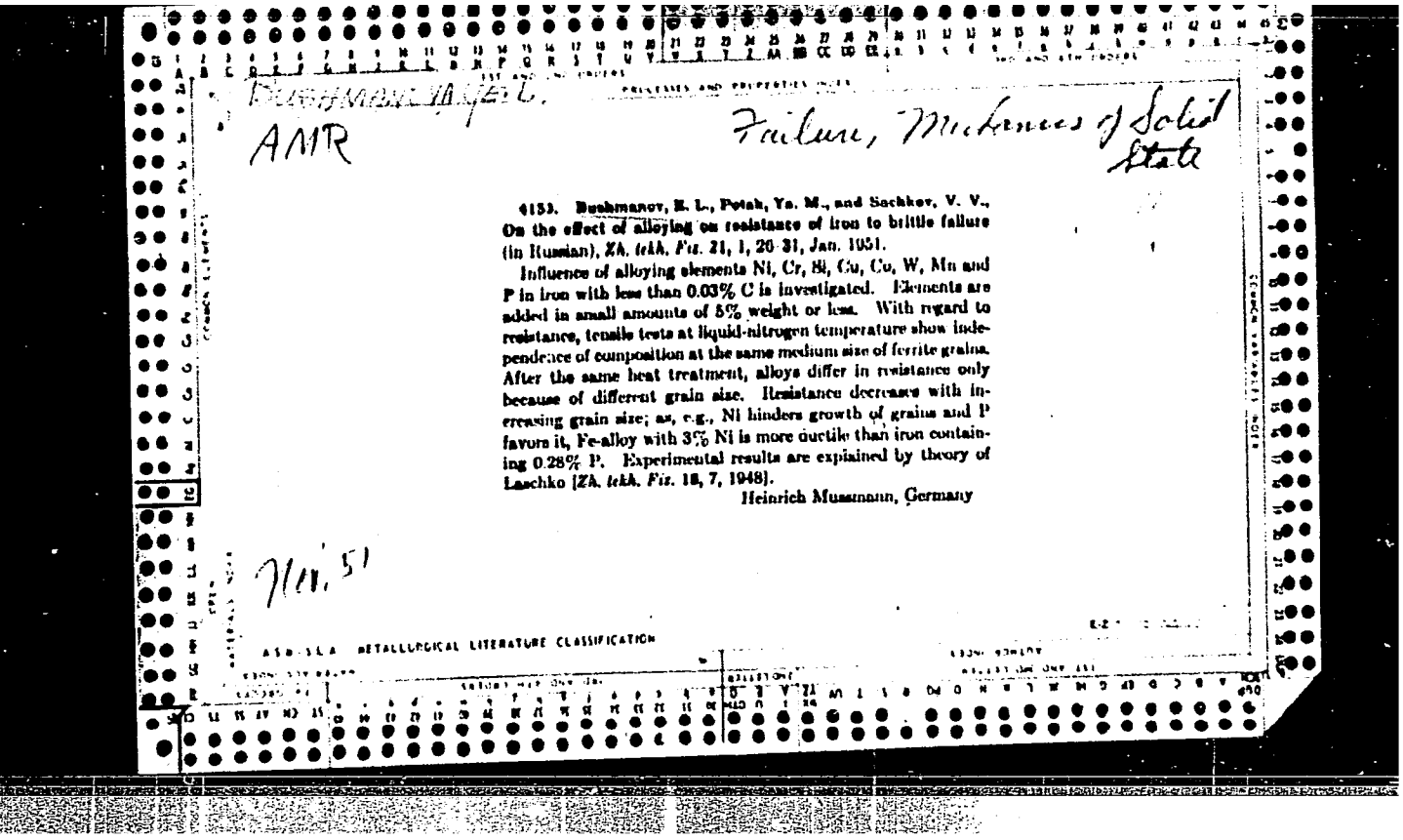


Bushmanov, B. L.

AMR

Failure, Mechanics of Solid State

4153. Bushmanov, B. L., Potak, Ya. M., and Sachkov, V. V., On the effect of alloying on resistance of iron to brittle failure (in Russian), *ZA. tekh. Fiz.* 21, 1, 26-31, Jan. 1951.

Influence of alloying elements Ni, Cr, Si, Cu, Co, W, Mn and P in iron with less than 0.03% C is investigated. Elements are added in small amounts of 5% weight or less. With regard to resistance, tensile tests at liquid-nitrogen temperature show independence of composition at the same medium size of ferrite grains. After the same heat treatment, alloys differ in resistance only because of different grain size. Resistance decreases with increasing grain size; as, e.g., Ni hinders growth of grains and P favors it, Fe-alloy with 3% Ni is more ductile than iron containing 0.28% P. Experimental results are explained by theory of Laschko [ZA. *tekh. Fiz.* 18, 7, 1948].

Heinrich Mussmann, Germany

7/11.51

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307720004-8"

BUSHMANOVA, Ye. L.

ALU Nr. 977-7 27 May

NEW STEEL FOR CARBURIZING (USSR)

Orekhov, G. N., M. F. Alekseyenko, Ye. L. Bushmanova, and V. M. Doronin. Vestnik mashinostroyeniya, no. 3, Mar 1963, 42-44.
S/122/63/000/003/006/008

The ЭП176 steel [0.11-0.17% C, 0.65-0.95% Mn, 0.40-0.80% Si, 1.3-1.7% Cr, 1.6-2.0% Ni, 0.20-0.35% Mo, or 0.60-1.0% W], developed at the Elektrostal' Plant, is intended as a substitute for 12XH3A, 12X2H4A, and other high-nickel steels. It is suitable for carburizing and cyaniding. Carbon concentration in a carburized (at 920°C for 12 hrs) layer reaches 0.8 to 1.2%, and the surface hardness in the heat-treated condition (oil quenching from 820-850°C and tempering at 170-200°C) exceeds 58 RC. Subzero treatment increases surface hardness to more than 60 RC. The mechanical properties of ЭП176 are identical to those of the 12X2H4A steel (tensile strength, 100 kg/mm²; yield point, 80 kg/mm²; elongation, 12%; reduction of area, 55%; impact strength, 10 kg·m/cm²). The microstructure of the carburized layer is satisfactory. No residual austenite or carbide network is present. The ЭП176 possesses a low notch sensitivity. [AZ]

Card 1/1

BUSHMARIN, N.

Industry of the present and the future. Voen. znan. 40 no.2:3-4 F '64. (MIRA 17:2)

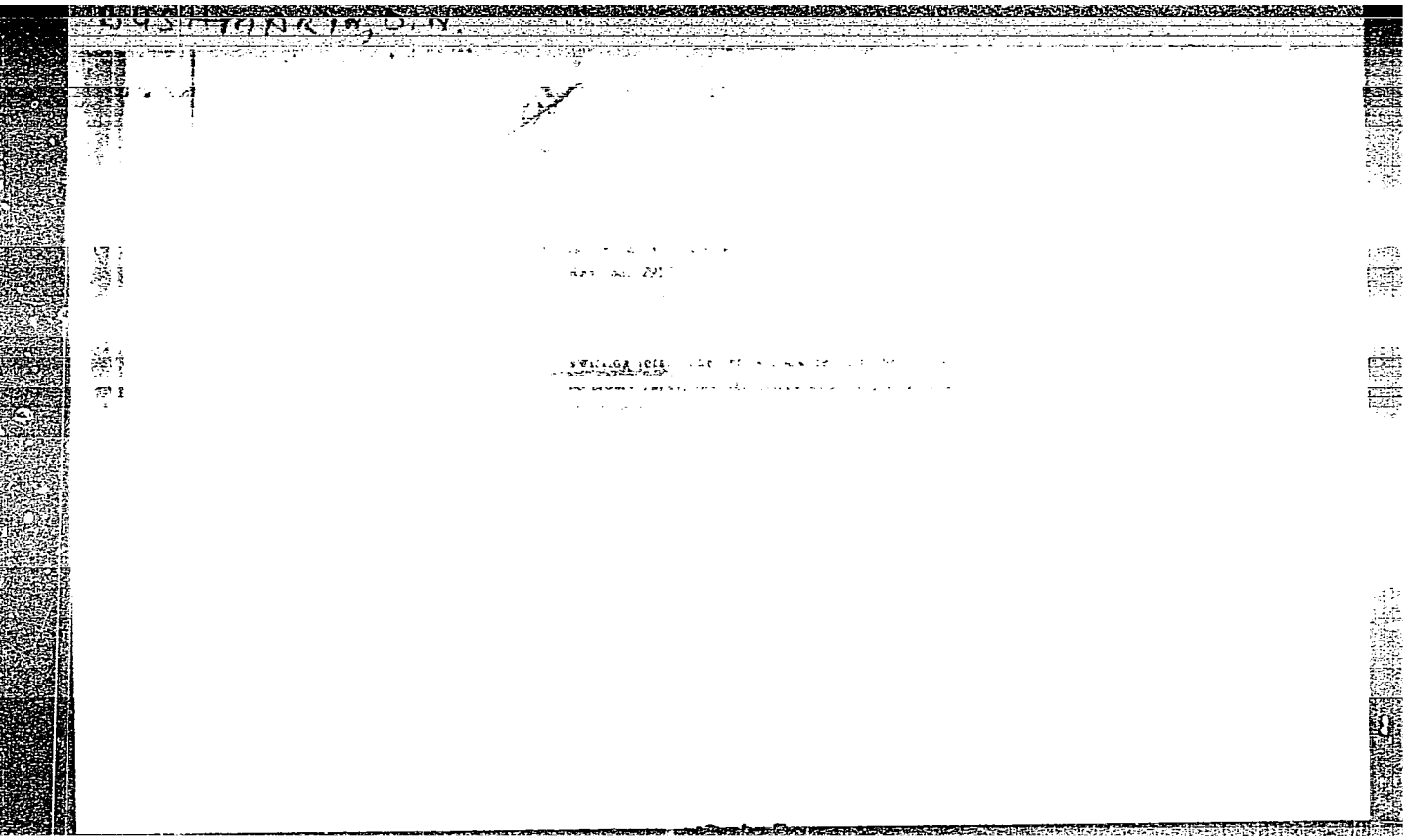
1. Nachal'nik otdela khimii Gosudarstvennogo komiteta Soveta Ministrov RSFSR po koordinatsii nauchno-issledovatel'skikh rabot.

BUSHMARIN, O. N. --

"Axisymmetrical Streams in Conjunctional Flow of a Liquid of the Same Density." Cand Phys-Math Sci, Leningrad Polytechnical Inst, Leningrad, 1954. (RZhMekh, Oct 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55



BUSHMARIN, O.N.

10(3,4) P.12 PHASE I BOOK EXPLOITATION SOV/3193

Leningrad. Politekhnicheskiy institut imeni M.I. Kalinina

[Trudy, no. 198] Tekhnicheskaya gidromekhanika (Industrial Hydromechanics) Moscow, Mashgiz, 1958. 220 p. Errata slip inserted. 1,500 copies printed.

Resp. Ed.: V.S. Smirnov, Doctor of Technical Sciences, Professor; Ed. of this book: L.G. Loytsyanskiy, Doctor of Physical and Mathematical Sciences, Professor; Managing Ed. for Literature on the Design and Operation of Machinery (Leningrad Division, Mashgiz): F.I. Fetisov, Engineer; Tech. Ed.: R.G. Pol'skaya.

PURPOSE: This book is intended for engineers working in the field of machine construction.

COVERAGE: This collection of articles contains the results of original work in the field of theoretical and applied hydroaerodynamics, completed in the aerodynamics laboratory of the LPI (Leningrad Polytechnic Institute) by members of the department

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of hydroaerodynamics and the department of theoretical mechanics. The book is divided into four parts. The first part contains studies of turbine steam-exhausts. The first article gives the results of a laboratory study on model-experiments on a test-stand and the general conclusions drawn therefrom. The second part contains articles on the theory of laminar and turbulent motion of a viscous fluid. The articles treat the hydrodynamic theory of friction in bearings and suspensions, boundary layers and jets, the initial part of a pipe in the presence of vortex, and the motion of air under the action of a corona conductor. The articles in the third part belong to the field of applied hydrodynamics. One of the articles is a theoretical and experimental study of flow around the parts of a radar antenna. The second article contains the results of aerodynamical analyses of fish-net models. The fourth part of the book contains the results of laboratory experiments on establishing new methods of aerodynamical measurements (friction forces on the surface of a streamlined body, pressure distributions in nonstationary flows). References accompany individual articles.

Industrial Hydromechanics SOV/3193

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PART FOUR. METHODS OF AERODYNAMIC MEASUREMENTS

Industrial Hydromechanics SOV/3193

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BUSHMARIN, O.N.; ANDREYEVA, T.V.; SKAVRONSKAYA, V.N.

Measuring friction in a turbulent boundary layer on a rough surface.
Trudy LPI no.198:193-202 '58. (MIRA 12:12)
(Boundary layer) (Friction)

BUSHMARIN, O.N.; ANDREYEVA, T.V.

Measuring friction in a turbulent boundary layer by the use of total-pressure tubes. Trudy LPI no.198:213-218 '58.
(MIRA 12:12)

(Boundary layer) (Friction)

S/563/61/000/217/003/012
D234/D308

AUTHOR: Bushmarin, O. N.

TITLE: Propagation of a radial slot jet in a radial concomitant stream

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy. no. 217. 1961. Tekhnicheskaya gidromekhanika, 64-70

TEXT: It is assumed that the liquid of the stream has the same density as the substance of the jet. The basic equation of the propagation of a laminar jet is derived and reduced to

$$a' + \frac{a^2}{2} + k\eta a - \frac{A^2}{2} = 0 , \qquad (22)$$

where a is the unknown function connected with the velocity, and

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Propagation of radial...

η is the independent variable--

$$\eta = \frac{y}{\psi \bar{v} x} \qquad (18)$$

The constant, k, expresses the intensity of the concomitant stream. The equation can be integrated in closed form only if $A^2 = 8k$. The solution is found and a relation defining A in terms of the momentum of the jet is derived. L. G. Loytsyanskiy is mentioned for his contributions in the field. There are 2 figures.

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BUSHMARIN, O.N.

Propagation of a radial slot jet in a radial cocurrent flow.
Trudy LPI no.217:64-70 '61. (MIRA 15:3)
(Jets--Fluid dynamics)

POVKH, Ivan Lukich; SEMENOV, V.P., otv. red.; BUSHMARIN, O.N., red.

[Aerodynamics; a manual for laboratory work] Aerodinamika; uchebnoe posobie k laboratornym rabotam. Leningrad, Leningr. politekhn. in-t, 1962. 126 p. (MIRA 16:10)
(Aerodynamics--Laboratory manuals)

BUSHMARIN, O.N.; MISHCHENKO, V.M.

Investigating the conic deflector of the model of a horizontal hydraulic turbine. Trudy LPI no.230:124-131 '64.
(MIRA 17:6)

POVKH, I.L.; KIRILLOV, I.I., doktor tekhn. nauk, prof., retsenzent; BUSHMARIN, O.N., kand. fiz.-mat. nauk, red. Prinimal uchastiye KOLOVANDIN, B.A.

[Technical hydromechanics] Tekhnicheskaia gidromekhanika. Moskva, Mashinostroenie, 1964. 506 p. (MIRA 17:12)

1. Kafedra gidroaerodinamiki fiziko-mekhanicheskogo fakul'teta Leningradskogo politekhnicheskogo instituta im. M.I. Kalinina (for Bushmarin).

L 8755-65 EEO-2/EWT(d)/FSS-2/EWT(1)/EPA(b)/EEC(k)-2/EWG(v)/EED-2/FCS(k)/FS(b)
EWA(1) Pd-4/Pe-5/Pg-4/Pk-4/Pl-4/Pn-4/Po-4/Pq-4 IJP(c) BC
ACCESSION NR: AT4041817 S/2563/64/000/230/0124/0131

AUTHOR: Bushmarin, O.N.; Mishchenko, V. M. B

TITLE: Study of the conical guidance system of a horizontal hydroturbine model

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy*, no. 230, 1964. Tekhnicheskaya gidromekhanika (Technical hydromechanics), 124-131

TOPIC TAGS: hydromechanics, hydroturbine, hydraulic turbine, turbine guidance system, hydroturbine model, horizontal hydroturbine, conical guidance device

ABSTRACT: In 1962, a study was made of the flow-through section of a model of a horizontal rotating-blade hydraulic turbine with a bulb located in front of the guidance apparatus. The study had the following specific purpose: to design, manufacture and test a conical guidance mechanism which would create a potential flow in the section immediately ahead of the turbine model rotor that is, a flow with twisting according to the law $V_u r$ = const, V_z = const. over the entire section. At the same time, it was [illegible] the requirement calling for complete blocking of the guidance apparatus at zero opening be fulfilled. In the present article, the authors report an experimental investigation of guidance apparatus having blades of various configurations, and give a velocity [illegible] calculation for the section following these guidance devices. Four different blade [illegible]

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figurations for the guidance mechanisms were studied. The fundamental differences in the four mechanisms were in the peripheral form of the blades, while their internal section (abutting on the turbine bushing) remained relatively unchanged. The conditions under which the velocity and pressure fields were measured in front of the working rotor are described in detail. The radii over which the measurements were made were selected at characteristic sites because of the disruption of the axial symmetry of the flow in the turbine by the columns supporting the bulb. The formulas used in the computation of the parameters of interest (velocity vector, pressure, etc.) are explained in the text. The velocity and pressure fields beyond the guidance apparatus were measured in the absence of the turbine model rotor; more accurately, with the blades of the rotor removed, but with the rate through the turbine kept equal to the rate with the rotor present. Experiments with lubricated slots are discussed and, on the basis of an examination of the data for V_{z1} and V_{u1} with and without slots, the conclusion is reached that the effect of the latter on the values of these velocities is felt at a distance of not more than 25 mm from the bushing; that is, 14% of the test radius. Projection curves of dimensionless velocities are given for specific operating modes of the turbine model. It is demonstrated that guidance mechanism No. 4 (see Figure 1 of the Enclosure) creates a flow before the rotor which approximates the potential flow. A comparison of graphs of reduced full pressure

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L 8755-65

ACCESSION NR: AT4041817

heads obtained in the section before the rotor revealed that an important advantage of the No. 4 apparatus, in comparison with the No. 1, is the reduction of energy losses. The authors also considered the problem of the calculation of the velocity direction behind the conical guidance mechanism. They note that the design of a guidance mechanism which will create a flow of given form in front of the working turbine rotor requires the solution of an inverse spatial problem, with the blade configuration found on the basis of a given flow before and after the guidance mechanism and also on the basis of several selected geometrical parameters of the array. Noting the extreme difficulties encountered in the use of this method, even in a simplified formulation, the authors attempted in this paper, to apply to the calculation of a conical guidance mechanism the method normally used in the computation of in-line arrays. [illegible] 8 formulas.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni M. I. Kalinina (Leningrad Polytechnical Institute)

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NO REF SOV: 003 OTHER: 000

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Guidance device No. 1 Guidance device No. 4

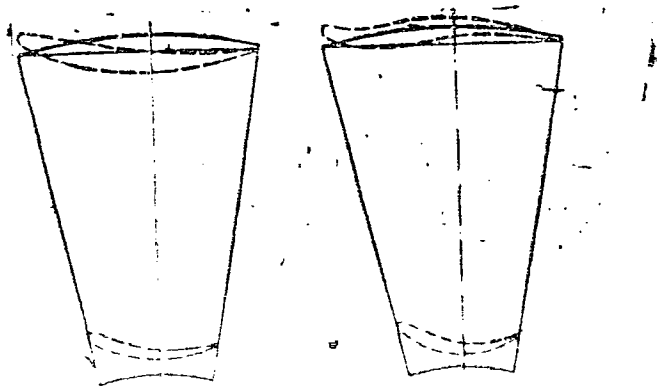

Figure 2 - Schematic representation of two guidance systems.

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S/190/60/002/03/03/014
B020/B066

53630

AUTHORS: Korshak, V. V., Gribova, I. A., Artamonova, T. V., Bushmarina, A. N.

TITLE: Synthesis and Polymerization of Aryl Phosphonitryls and Alkyl Phosphonitryls

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 3, pp. 377-385

TEXT: The present paper deals with the reaction of diaryl and dialkyl phosphorus trichlorides with ammonium chloride in organic solvents with respect to a possible production of aryl and alkyl phosphonitryls. It is hardly believeable that all chlorine atoms in the molecules of dialkyl and diaryl phosphorus trichlorides be equally reactive and react at the same time with NH_4Cl. The authors also investigated the mechanism of this reaction, using diphenyl, dibutyl, and diethyl phosphorus trichlorides as initial products. The chloride of dibutyl thiophosphinic acid was obtained in a good yield by using M. I. Kabachnik's method (Ref. 7). The

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conditions of reactions in organic solvents (chlorobenzene and dichlorobenzene) i.e., mainly temperature, molar ratio of the reaction components, duration of the reaction, etc. influenced the yield of the resultant products and their molecular weight. The reactions of diaryl and dialkyl phosphorus trichlorides proceed by a step-by-step mechanism showing three principal stages: 1) starting growth of the chain; 2) growth of the chain; 3) chain interruption. It was shown that at 175°, a diphenyl phosphorus trichloride/ammonium chloride ratio of 1:5, and with a reaction time of 20 hours octaphenyl tetraphosphonitryl is obtained in a 70% yield. From the experimental results obtained new concepts on the reaction mechanism were outlined. The polymerization of phosphonitryl derivatives in the temperature range 320 - 500° was studied on octaphenyl tetraphosphonitryl (Table). Under the present conditions (400 - 500°), a mixture of tri-, penta-, and hexamers is obtained as well as a product insoluble in organic solvents with a softening point of 350 - 450°. The preparation of diphenyl phosphorus trichloride, diethyl phosphorus trichloride, dibutyl phosphorus trichloride, octaphenyl tetraphosphonitryl, hexaphenyl triphosphonitryl, the compound $HO\text{-}P(C_6H_5)_2\text{=}N\text{-}P(C_6H_5)_2\text{=}N\text{-}P(C_6H_5)_2\text{=}N\text{-}P(C_6H_5)_2\text{=}O$, imido

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tetraphenyl diphosphinic acid, and the compounds $HN=P(C_6H_5)_2-N=P(C_6H_5)_2-NH_2HCl$, $Cl-P(C_4H_9)_2=N-P(C_4H_9)_2=N-P(C_4H_9)_2=O$ and $Cl-P(C_2H_5)_2=N-P(C_2H_5)_2=N-P(C_2H_5)_2=NH$ is briefly described. Mention is made of T. A. Mastryukova and A. E. Shipov (Ref. 7). V. K. Shitikov, G. M. Andreyeva, and N. Ya. Gordeyeva assisted in this work. There are 1 table and 7 references: 1 Soviet, 2 US, 2 German, 1 French, and 1 Italian.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental-organic Compounds AS USSR)

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